What is claimed is:

1) An efficient method for modeling a ship's structure including equipment and ship's sections that do not form an integral portion of the ship's hull, keel and integral structure, the ship having a centerline and a center of gravity comprising:

a) constructing a thin shell hull model of the ship;

b) constructing a beam model of the ship within the thin shell hull model, the beam model having a principal beam that runs down the centerline along the center of gravity of the ship and is connected to the hull through a series of rigid or nearly rigid spider type connections from nodes in the beam model to nodes in the hull model;

c) adjusting the beam model to match the approximate mass and stiffness of the ship;

d) constructing a detailed model of equipment and ship sections that includes those portions of the ship that form an integral part of the ship structure as defined in the beam model; and

e) inserting the detailed model into the beam model such that the beam model passes through the detailed model while reducing the added lump masses along the beam in the region of the detailed model.

2) The method of claim 1 wherein adjustment of the beam model to match the approximate mass and stiffness of the ship is accomplished by adding

lumped masses along the length of the beam in approximate proportion to the mass distribution of the ship's structure and equipment, and varying the cross-sectional and/or material properties of the modeled ship until the natural frequencies of the ship are in reasonable agreement.

5